European Cooperation in the field of Scientific and Technical Research - COST -

Secretariat

Brussels, 27 January 2012

Full proposal reference oc-2011-2-10938 for a COST new Action

Subject: Full proposal for a new COST Action:
Strengthening conservation: a key issue for adaptation of marginal/peripheral populations (MaP-FGR) of forest tree to climate change in Europe.

Proposer: Dr. Fulvio DUCCI
CRA SEL, Consiglio per la Ricerca e Sperimentazione in Agricoltura, Centro di Ricerca per la Selvicoltura
DAF, Dipartimento Agronomia, Territorio e Foreste
Viale S. Margherita, 80
Arezzo - IT
fulvio.ducci@entecra.it

National Coordinator: [*]

Domain Committee: Forests, their Products and Services

[*] Will be completed by the COST Office
MEMORANDUM OF UNDERSTANDING
For the implementation of a European Concerted Research Action
designated as

COST Action

Strengthening conservation: a key issue for adaptation of marginal/peripheral populations
(MaP-FGR) of forest tree to climate change in Europe.

The signatories to this "Memorandum of Understanding", declaring their common intention to
participate in the concerted Action referred to above and described in the "Technical Annex to the
Memorandum", have reached the following understanding:

1. The Action will be carried out in accordance with the provisions of document COST 299/06
"Rules and Procedures for Implementing COST Actions", or in any new document amending or
replacing it, the contents of which the Signatories are fully aware of.

2. The main objective of the Action is [*]

3. The economic dimension of the activities carried out under the Action has been estimated, on
the basis of information available during the planning of the Action, at [*] Euro [*] million in [*]
prices.

4. The Memorandum of Understanding will take effect on being signed by at least five Signatories.

5. The Memorandum of Understanding will remain in force for a period of [*] years, calculated from
the date of the first meeting of the Management Committee, unless the duration of the Action is
modified according to the provisions of Chapter V of the document referred to in Point 1 above.

[*] Will be completed by the COST Office
A. ABSTRACT & KEYWORDS

A.1 ABSTRACT

Marginal/peripheral (MaP) forest populations are at the edges of species ranges and contain an original genetic diversity due to unsuitable conditions for survival. Studying adaptive processes in MaP populations is crucial and of mutual interest for European and non-European countries for understanding the future of forest ecosystems. Developing conservation and management strategies for Forest Genetic Resources (FGR) of MaP populations is needed to adapt European forests to Global Change. Because of their millennia-long history of adaptation to environmental changes, FGR growing in southern Europe may prove invaluable for adapting the European forestry sector. However southern MaP populations are not only threatened by ongoing climate change but also by other disturbances arising from human activities. Southern Europe represents an ideal model where the effects of climate change on FGR will be stronger and more rapid than in the rest of Europe. This proposal, with its broad research spectrum and partnership, addresses the conservation and management of MaP FGR by: (i) compiling information on climate change impacts on MaP populations, (ii) making information available for preparing national and pan-European forest plans and strategies for adaptation and mitigation, (iii) developing criteria for monitoring and conserving FGR and (iv) sharing results with forest managers.

A.2 Keywords

Forest Genetic Resources, Adaptation to global change, Marginal/peripheral Populations, Genetic Erosion, Conservation

B. BACKGROUND

B.1 General background

Global change will seriously affect all of Earth’s biomes. Forest ecosystems and people dependent on their goods and services are at risk. Preserving Forest Genetic Resources (FGR) is crucial for forest ecosystems and people’s well-being. Marginal/Peripheral (MaP) populations, i.e. from the edge of distribution areas, are particularly important for adapting forests to global changes. In Europe, all major biomes contain MaP populations. Surviving well under unsuitable ecological conditions, they might contain unusual adaptations and constitute valuable FGR for expanding as well as retreating European forests.

Many species worldwide are moving to higher latitudes and elevations in response to climate change. Range shifts are generated by widespread establishment of new populations at the high latitude range margins and massive extinctions of MaP populations. The limit of species ranges remains understudied and the need for
long term conservation of genetic diversity of these populations is underestimated. These populations are more threatened by climatic changes particularly because the changes act in combination with other disturbances originating from human activities.

There is no agreement on what the crucial mechanisms are that govern the resilience of MaP populations, including the role of local adaptation, demography, population dynamics and migration. MaP populations generally encounter more extreme biotic and abiotic conditions than those at the centre of the distribution and have therefore had to adapt to these conditions. Forest ecosystems and many species in southern Europe have experienced and survived post-glacial warming, and represent a valuable and original source of genetic variation. However, the speed of the current climate change will greatly exceed that of the past climate changes as well as the migration potential of forest trees.

Southern European forests are ecologically rich and have resisted climate changes throughout the Pleistocene. Consequently they represent “hot spots” of genetic diversity. In view of the expansion of southern-Europe-like climate conditions to large portions of Europe by the end of the 21st century, FGR of southern edge MaP populations are particularly important for the future of European forests.

FGR of MaP populations represent a great potential for European forests under climate change that need to be taken into account in national and pan-European forest plans and strategies for adaptation and mitigation.

Current knowledge on MaP populations is, at best, fragmented and impossible to be transferred into management and policy making. Genetic variation is a crucial factor for the long term adaptation of forests to climate change. In spite of this, FGR have been insufficiently taken into account in national forest plans (NFP), national strategies for adaptation and mitigation, and even in practical aspects of forest management activities. Strategies for use of ‘pre-adapted’ Southern MaP FGR for dealing with Global Change in northern forests (i.e. assisted migration) remains controversial and the subject of a lot of debate.

To tackle these problems, a multidisciplinary approach, engaging a range of experts (e.g. geneticists, breeders, forest managers, stakeholders, sociologists, economists, ecologists, entomologists, climatologists) from European Union and non European Union countries is needed. New tools and methodologies are required.

A COST Action represents the best mechanism to achieve the objectives as it is designed as an efficient tool for networking, training, and sharing information, which are essential for fostering interdisciplinary approaches in scientific fields.

Whereas much research is now focusing on processes occurring at the expanding high latitude limit of the species distribution, populations at the low latitude range remain understudied. This is regrettable because they represent extremely important reservoirs of genetic variation. Moreover they represent natural laboratories to predict how populations will respond and adapt to future climate changes. In view of the future shift and expansion of Mediterranean-like conditions, MaP FGR will be important for use in other northern-more European countries. Southern Europe is a region where cooperation (North-South, North-North and South - South) is particularly relevant to overcome the challenges of adapting to climate change in the context of the
neighboring policy of the European Union.

Countries from across Europe, as well as non European Countries, can bring new ideas, skills and experience developed at local level on how to protect FGR. Cooperation, networking and involvement of all the scientific community is thus a basic principle for obtaining effective results from a possible COST Action.

There is increasing concern in Europe over the sustainability of forest ecosystems under global change (See recommendations from Ministerial conferences on the protection of forests in Europe : FOREST EUROPE 2011, Oslo, http://www.foresteurope.org/). Several issues raised by FOREST EUROPE involve adaptation to climate change, genetic diversity of forest trees and their conservation as a way of safeguarding the evolutionary potential of forest ecosystems over time. The recommendations of an international workshop on climate change and forests, organized in 2005 in Paris by EUFORGEN (European Forest Genetic Resources Programme) and IUFRO (International Union of Forest Research Organizations) in collaboration with FOREST EUROPE liaison unit (Warsaw) clearly stated that safeguarding and using genetic diversity of keystone forest ecosystem species should be a priority on policy maker’s agendas to mitigate the effects of climate change.

The goals of this proposal also deal with some of the challenges defined in the Oslo Declaration on the occasion of the Fifth Ministerial Conference on the Protection of Forests in Europe (Oslo Declaration, 2011; http://www.foresteurope2011.org). For example “item 21c. Promote education, research and the use of scientific knowledge and facilitate sharing of experiences across countries, sectors and stakeholders on all aspects of sustainable forest management and other forest related issue.”

B.2 Current state of knowledge

Climate change cannot be considered as an independent factor or only as a complex of natural factors, but it should be considered within the wider context of interactions arising from the increasing human activities and the biosphere known as Global Change. Although comparing central and peripheral populations as a long tradition in ecology and genetics, a static view of species distribution has prevailed so far (Eckert et al., 2008). A new perspective is needed to evaluate how the distribution range of species moves in response to climatic change.

I) Current state of knowledge on impact of Climate Change in Southern Europe

1. South European areas are very sensitive to climate change, which is having rapid and severe impacts (Source: IPCC 4th assessment report 2007 and Box 1 / Box 2 of the Mediterranean Research Forest Agenda 2010-2020 published by EFIMED on possible tendencies of climatic change under hypothesis from the IPCC scenario A1B);
2. Climate change is multi-factorial, there is a need to consider steady changes as well as the impacts of extreme events on FGR (Mátvás, 2000).
3. Risk of forest fires is already increasing in southern Europe and this risk will also become more
important in several other European regions (EU project Fire Paradox, EU Project on ALP FFIRS).

4. Climate induced degradation may reduce carbon sequestration and result in extreme cases in the limitation of mitigation potential of forests that will act only as net carbon sinks (EU project CarboEurope). Use of appropriate FGR could improve the potential of southern European forests for carbon sequestration.

5. Considering the specificity of water and forest interactions: the survival of MaP southern forests is at stake in several zones with already visible forest decline (i.e.: Scots pine, silver fir and beech in France, Italy and Spain; cork oak in France, Italy, Portugal, Spain as well as in Algeria, Morocco, Tunisia and cedar in some parts of France and Italy as well as in Algeria, Lebanon, Morocco).

6. Biotic interactions (insects, pathogens), which can have severe impacts on forest ecosystems, are unpredictable in particular in the context of climate change (Brazier 1996). For example, the impact of climate-change mediated insect epidemics can already be observed in western Canada where the mountain pine beetle (Dendroctonus ponderosae) has devastated more than 13 million hectares of forests throughout much of the interior of the province of British Columbia, Canada (Konkin and Hopkins 2009).

7. Soil evolution, litter degradation and mineralization of organic horizons will be also influenced by climate change and will interact with species and water stocking ability (Albergel et al. 2010).

8. Isotherms will probably shift very rapidly because of increasing average temperatures. In regard to the ability of tree populations to migrate under the influence of isotherm shifts, Mátys (2007) proposed a scenario where mean temperature would increase about 2°C in 35 years.

9. MaP populations represent highly instructive models and natural laboratories to investigate how populations respond to demographic and ecological challenges (Heckert et al. 2008, Gaston 2009) and eventually how they will adapt to future climatic conditions.

The improvement of knowledge on MaP FGR will allow development of new models and tools in order to optimize forest management taking into account forest genetic resources issues.

II) Current state of knowledge on MaP FGR/genetic diversity in Europe

1. Genetic diversity is a key component involved in evolutionary processes of forest ecosystems and species for adaptation to climate change (González – Martínez et al. 2006, Vendramin et al. 2008, Matyas et al. 2009; Grivet et al., 2009, 2011; Ganopoulos et al., 2011).

2. Human actions can impact genetic diversity and adaptation/adaptability to climate change (Koskela et al., 2007).

3. Overall, tree species at the southern range have a very high genetic diversity (Smulders et al. 2009) but at MaP FGR level genetic diversity can vary tremendously, some populations displaying very low diversity (Grivet et al. 2009, 2010; Fady 2005; Fady and Conord 2010). In fact, as MaP populations are frequently smaller, they may be less variable (but potentially more adapted to future climate conditions) than populations in the central part of the distribution area of the species (Sagarin and Gaines, 2002). Others MaP populations, particularly in Southern Europe, contain an original genetic diversity as a
legacy of past evolutionary processes (Hampe and Petit, 2005).

4. So far species were generally successfully able to adapt to past climate changes (Eriksson et al., 1998; Hamrick 2004; Hampe and Petit, 2005). On the other hand humankind and its significant and rapid demographic and industrial development represent a new factor influencing species adaptive potential (Lefèvre, 2004).

5. Rates of spread of forest trees (m/year) are far below what would be necessary (3000 to 5000 m/year) for species migration to track future climatic warming (Mátyás, 2007). Gene flow capabilities (via pollen) are also below what would be necessary to track climate change and increasing turnover has been proposed as a way of recruiting non-local genes to populations (Kramer et al., 2008; Savolainen et al., 2007).

6. Flowering phenology studies indicated that climate change could result in pronounced asynchrony among male and female flowering and thus in lack of seed set for xerothermic years in forest ecosystems (Xiaoqiu et al., 2005; Estrella et al., 2006; Perini et al, 2007; Moriondo and Bindi, 2007; Alizoti et al., 2010).

7. Over a long period of time, many studies have been made on genetic variation and international comparative genetic trials have been carried out with a regional perspective (Besacier et al., 2011). FGR have already been tested in climate conditions that are predicted to occur in more northern latitudes in Europe in the future (EU FORADAPT – EU MPC – EU NOVELTREE – EU TREEBREDEX – FAO Silva Mediterranea – IUFRO). Data and results from international trials on several forest species established throughout Europe indicate a high variability at adaptive traits as well as a high phenotypic plasticity (Savolainen et al., 2007). The existing experimental networks established within the framework of international trials (FAO Silva Mediterranea and IUFRO, FORADAPT) represent a relevant source of information to estimate genetic parameters in relevant adaptive traits and clarify the role of phenotypic plasticity as a mechanism allowing forest species to cope with environmental heterogeneity (Sultan, 2000).

8. Information from new techniques (e.g. high throughput genotyping and phenotyping techniques) is now available from some EU countries (EU EVOLTREE – ERA-net, Biodiversa LinkTree).

B.3 Reasons for the Action

The selection of populations now should consider the adaptability to future conditions and information on FGR (and their adaptive potential) is needed for preparation and implementation of conservation strategies at national and regional levels.

Projections of future species distribution in relation to climate and its change (envelope models) should be improved by integrating the evolutionary processes based on genetic diversity.

Forest decline already occurring in certain areas will provide the environmental thresholds for the species existence and reproduction, so that assisted migration or evacuation actions could be taken with the first signs of decline.
Currently the results and tools from the previous research are not easily available for users such as forest managers, conservationists and policy makers.

New concepts and guidelines should be developed as quickly as possible. In the same way, genetic knowledge and monitoring of populations’ structure could help to find adaptive management options and for developing mitigation strategies for forest ecosystems.

This COST Action will be an opportunity to:

1. Contribute to reducing the fragmentation in European research around the key problems of conserving and using MaP FGR.

2. Increase knowledge and identify gaps for future research on the relationship between genetic diversity and adaptation to climate change.

3. Highlight the importance of southern MaP FGR for countries further north under climate change conditions, because they are often adapted to warm and dry climates, which are expected to extend to north in the near future.

4. Provide researchers across Europe with the opportunity to observe forests undergoing climate stress, with a view to understanding processes likely to affect forests more widely in the future.

5. Aid European countries to establish or to improve their strategies of adaptation and mitigation.

6. Integrate skills, knowledge and tools in order to develop efficient and common strategies to preserve European FGR.

7. Develop clear and readily applicable guidelines and tools for forest managers and decision makers (recommendations methods, decision-making tools, etc.).

8. Enhance the collaboration/cooperation among countries in the field of MaP FGR which is of mutual interest in the context of global change.

Fostering a dialogue among scientists from different disciplines will provide new insights on the adaptation of MaP FGR to the effects of climate change. The results of this dialogue will be the basis for providing guidelines and recommendations at different levels (forest management plans, national forest plans and strategies for adaptation to climate change, regional strategies or initiatives relevant to forests and climate change adaptation).

Applying knowledge on MaP FGR to the challenge of adapting to climate change in the future will also entail defining an efficient monitoring network of sites, taking advantage of the existing comparative trials. The effort can also identify those populations for which conservation is urgently needed and work to provide
guidelines for their conservation. It will be the first European wide initiative trying to clarify how MaP populations will react to climate change and how to use their adaptive capacity for other forest ecosystems.

The results of this action will be an added value for the implementation of EU activities on forest reproductive material, genetic resource conservation and use, forest management and afforestation guidelines, biodiversity conservation and sustainable use, within the Pan-European Process of Forest Protection (Forest Europe).

B.4 Complementarity with other research programmes

At the European Union level this COST Action will act to synthesize outputs from several EU projects as TREEBREEDEX, EVOLTREE, NOVELTREE, EUFGIS, COST FPS-ECHOES, COST ESSEM-CLIVAGRI, AGORA, LINKTREE, FORGER, TREE4FUTURE. Tools and methodologies provided by these projects and networks will be used in this COST Action and serve the goal of strengthening cooperation and exchange of information between countries.

Moreover it is in line with the priorities included in the Mediterranean Forest Research Agenda 2010-2020, prepared by the Mediterranean Office of the European Forest Institute (EFIMED) and agreed by the European Forest-Based Sector Technology Platform (FTP). In particular this COST Action is complementary to the ERA-net project “FORESTERRA” (reinforcing the scientific coordination and integration of forest research among Mediterranean countries and other Mediterranean climate areas) currently under preparation by EFIMED and the Ministerio de Economía y Competitividad in charge of Research and Innovation in Spain.

In addition this COST Action is in synergy with several initiatives such as:

- European Forest Genetic Resources Programme (Bioversity International/EUFORGEN) for implementing Resolution S2 of the Ministerial Conference on the Protection of Forests in Europe (Strasbourg 1990);
- The Work Plan of the working group on Forest Genetic Resources in the framework of the FAO Committee on Forestry Questions (Silva Mediterranea);
- Training activities of the International Center of Advanced Mediterranean Agronomic Studies (CIHEAM);
- Activities of the IUFRO – Division 2, the WP 2.02.13 “Breeding and genetic resources of Mediterranean Conifers” and WP 2.04.01 “Population, ecologic and conservation genetics”.

At the global level this COST Action will contribute to several international initiatives:

- It is consistent with the needs identified by UNFCCC for adaptation and mitigation to Climate Change (Intergovernmental Panel on Climate Change - IPCC- scenarios for the Mediterranean region will be applied in this Action);
- It will contribute to the State of the World Forest Genetic Resources launched by FAO and to be
published in 2013;
- It is also in line with International Union for Conservation of Nature (IUCN) priorities and International Union Forest Research Organizations (IUFRO) goals proposed during the last World Congress held in Seoul (2010).

C. OBJECTIVES AND BENEFITS

C.1 Aim

The main objective is to generate relevant knowledge on the role and use of MaP populations to adapt forests to global change using a multidisciplinary approach. Because they emerge from different processes, not all MaP populations may hold the same value for adapting forests to climate change (Lesica and Allendorf 1995). Some, resulting from maladaptive gene flow from central populations (Lenormand 2002) may have little value for conservation and use, although, being differentiated, they represent a potential reservoir of original diversity that could be useful in the future. Others, particularly those in Southern Europe, result from long term evolutionary and adaptive processes (Hampe and Petit 2005) and their FGR may contain original genetic combinations of high value for mitigation and adaptation. Prioritizing MaP FGR on the basis of their genetic value is one of the objectives of this Action. The expected results will have direct relevance for conservation and management, by identifying populations of unique conservation value and by producing guidelines for long term protection of MaP FGR. The Action will train researchers of European and non-European countries and establish active and efficient networking/exchanges among scientists.

C.2 Objectives

Specific objectives are:

- To collect, collate, analyze and synthesize information from past and ongoing projects related to genetic diversity and impacts of climate change;

- To record and list existing conservation efforts and status, in order to identify gaps and set conservation priorities (e.g. gap analysis based on the EUFGIS survey of in situ conservation of FGR: revealed a clear gap on Mediterranean FGR (manuscript submitted);

- To analyze and raise awareness on the role of FGR in the adaptation of MaP populations;

- To perform meta-analysis of collected data to identify common trends on the dynamics of genetic diversity in relation to the response to the effects of global change;
- To provide recommendations and guidelines for forest managers and national policy makers to conserve and sustainably use MaP FGR for forest adaptation and mitigation to climate change;

- To highlight the potential of MaP populations for the adaptation to climate change in other networks dealing with FGR conservation (e.g. Bioversity International/EUFORGEN, FAO-Silva Mediterranea and EFIMED);

- To identify new research priorities on FGR for future joint EU projects;

- To organize conferences, workshops and training schools for the scientific community, end users and stakeholders on the role of FGR from southern edge populations for adapting forests to global change.

- To publish results in journals with public access policy.

C.3 How networking within the Action will yield the objectives?

The objectives will be achieved by:

1. Combining existing information from several sources on forest genetic resources and ecological conditions on MaP populations and making this information usable through databases. For this purpose, the experience gained at European level from work of the EUFORGEN, TREEBREEDEX, EUFGIS and EVOLTREE networks will be of major importance.

2. Analyzing this combined information to increase knowledge on the relationship between genetic diversity and adaptation to global change and particularly to climate change;

3. Identifying gaps for future research and providing tools for forest managers and decision makers (guidelines, recommendations, methods, decision-making tools, etc.);

4. Training and networking researchers of European and non-European countries through the organization of annual training schools and the establishment of active and efficient exchanges among scientists (workshops, conferences, working groups, publications, etc.);

5. Combining information on the current conservation status of FGR and identify gaps related to species/MaP populations.

C.4 Potential impact of the Action

The benefits of the Action will be at three main levels:

1. Scientific and Technological Knowledge:
• genetic and ecological data made available through an open access database, sharing scientific information to reduce fragmentation and gaps in knowledge and research;
• model on conservation and management of MaP FGR provided in the context of global change;
• knowledge provided on the value of MaP populations as long-term reservoirs of genetic variations and evolutionary potential for central populations.

2. Capacity building:

• standardized methods and protocols to provide common methodology for conservation and management of MaP FGR;
• training of scientists and practitioners.

3. Social and Economic impacts:

• preserve multifunctional forests together with the goods and services they provide to local populations and other stakeholders in the forestry sector, safeguard precious MaP FGR and transfer of knowledge to policy makers.

C.5 Target groups/end users

The achievements obtained in this Action will contribute to the current international initiatives to assess biodiversity at all levels of organization.

The Action expects to provide the scientific community, especially biologists and ecologists, with a deeper understanding of the importance of tree genetic diversity for the sustainability and resilience of forest ecosystems.

It will provide forest managers, nature conservationists and policy makers with guidelines to manage forest ecosystems and MaP FGR that are affected by global change.

The Action will be able to provide guidelines to policy makers for the choice of appropriate “minimum requirements” to select forest ecosystems and MaP FGR stands that will be recognized and managed as conservation units at the European scale.

Forest Researchers will be able:

• to improve synergy between countries/institutions/teams/networks;
• to enhance their access to relevant information/data/maps through databases;
• to develop new innovative research projects on FGR and genetic diversity in the context of global change;
• to train a new generation of researchers on MaP FGR (Capacity building).

Policy makers will enhance their ability to integrate FGR issues in National Forest Programs and strategies for adaptation and mitigation to global change. New tools and methods will be available at national level to improve monitoring, regulation and certification of FGR.

Forest Managers will be able to integrate FGR issues in their practice for Sustainable Forest Management using the recommendations and guidelines provided by the COST Action;

Conservationists will be able, with maps and data made available by this COST Action, to identify the most endangered populations/species and the best sites for ex situ conservation.

Forest owners will be able to choose the best adapted reproductive materials to future climate conditions for reforestation/afforestation activities.

D. SCIENTIFIC PROGRAMME

D.1 Scientific focus

Task 1 – Scientific and technical information on ecological conditions including climate change impacts on MaP populations at southern limits of the species.

1. Inventory of regional/national maps and/or links to web sites of climatic maps including future scenarios: all maps and data concerning estimated climate change scenarios should be collected, standardized, possibly geo-referenced in GIS and used to produce a climate scenarios map;
2. Inventory of regional/national maps and/or links to web sites concerning location of soil types and morphology: all maps and data concerning the soil, topography and geomorphology (i.e. European map of soils, maps of aspects and slopes) should be collected, possibly geo-referenced in GIS and used to produce a combined map;
3. Identification of pedo-climatic parameters characterizing species ranges.

Expected deliverables:

• Maps, atlas, databases (D1)
Task 2 - Genetic information including adaptive traits of MaP populations at southern limits of the species.

1. Identification of most relevant species;
2. Identification of skills and gaps in forest genetics research capacity;
3. Survey and description of conservation and mitigation methods and actions with special reference to climate change;
4. Survey and description of available FGR;
5. Survey of the existing information on variability of relevant genetic parameters by species for molecular markers and adaptive traits.

Expected deliverables:

- A web-based directory of human resources and infrastructure/organizations working or skilled on FGR of MaP populations (D2);
- A directory of genetic resource conservation methods applied in COST and neighboring countries, with special reference to global change (D3);
- Database of forest genetic resources for conservation and for use (genetic conservation units, basic material, genetic trials)(D4);
- Maps of the present variation of the main genetic parameters related to erosion - extinction risks by species/populations (D5).

Task 3 - Analysis and synthesis of available ecological and genetic information and knowledge gaps highlighted in Task 1 and Task 2 and recommendations for forest managers and for national policy makers

1. Discussion on the impact of possible scenarios of environmental changes on FGR highlighting risk areas and refuge areas;
2. Inventory of most endangered populations with need for immediate conservation actions, and identification of suitable areas for rescue;
3. Development of indicators (at regional level) for monitoring FGR for conservation and sustainable forest management in the context of global change;
4. Identification of gaps on information and knowledge on species, areas of distribution and tools, for conservation and use of MaP FGR in COST and neighboring countries;
5. Preparation of Technical Guidelines for forest managers and for national policy makers for conservation of MaP FGR and forest reproductive material for climate change adaptation;
6. Facilitation of exchanges of genetic resources for conservation and research purposes among Europe and neighboring countries, according to international agreements on FGR transfer.

Expected deliverables:
• Predictive maps of changes in the distribution, composition and structure of some selected species in relation to climate change scenarios (D6);
• Report on scientific and technical information on the potential effects of climate change on FGR including analysis of existing comparative genetic trials (D7);
• List of most endangered/diverse species and populations and those key for the future of the EU forest sector under global change (D8);
• Guidelines for mainstreaming genetic diversity into sustainable forest management in the context of global change in Europe (including legal transfer issues) (D9).

**Task 4** Coordination and organization of all networking, databases management, training and communication activities: web-site, organization of conferences, training schools, short term scientific missions.

In this work package, the Action will interact with end users and will involve stakeholders (foresters, NGO representatives, forest owners, etc.) in project discussions and meetings. Target groups will include scientists, nature conservationists, national forest managers and European policy makers. In close collaboration with Bioversity International/EUFORGEN and other EU networks, the Action will implement the communication plan to reach stakeholders and general public. A panel of representative end users in the management community will be identified to interact with scientists involved in ongoing forum discussion and specific sessions during the course of the project.

A web-based, user friendly toolbox will be constructed in order to facilitate scientific exchanges among participants, disseminate the results to end users and manage databases in a long term and open access perspective. The web page will be developed in close collaboration with webmasters responsible for web sites such as EUFGIS, EUFORGEN, TREEBREEDEX, FORADAPT, EVOLTREE, for a better integration of databases and to avoid duplications.

In addition, to increase the efficiency of dissemination, the Action will organize workshops and conferences for target groups to promote and facilitate uptake of the results, at international, regional, national and local level.

Because COST Action results are expected to be of interest for a broad scientific community, their publication will be targeted in broad audience journals and wide technical methods will be published in more specialized ones.

At the graduate level, emphasis will be put on improving the trans-disciplinary perception of the function of FGR and, particularly MaP FGR, in securing long term adaptability of forest ecosystems. Possibilities for specialization in this field will be provided by organizing training schools.

A final meeting will be organized to present the results to the target groups, to discuss the implications of the results for the management of MaP FGR and to adopt recommendations and guidelines.
Expected deliverables:

- Conferences, workshops, training schools, open access databases, web toolbox, reports, publications, STSMs (D10).

D.2 Scientific work plan - methods and means

The project will benefit from an unprecedented multidisciplinary approach. The work plan will be carried out by 4 Working Groups (WG):

- WG1: Gathering of already available data and compilation of ecological, genetic and global change information, and particularly climate effects, on FGR and distribution of MaP populations (e.g. climatic scenarios and models, forest decline maps, lists of endangered materials). WG1 will include climatologists, soil scientists, ecologists and geneticists and will be mainly focused on Task 1 and Task 2 (deliverables D1, D2, D3, D4);
- WG2: Evaluation and analysis of WG1 information (e.g. genetic diversity maps per species/populations, methodology for evaluation of FGR diversity, compilation of databases of relevant institutions, genetic material, trials and networks, gaps of information). Standardization of methods. Meta-analysis of the data to identify common and divergent trends of FGR response to global change. WG2 will include ecologists, geneticists and silviculturists and will be focused on Task 2 and Task 3 (deliverables D5, D6, D7, D8);
- WG3: Mainstreaming genetic diversity into sustainable forest management in the context of global change, considering both conservation and use of FGR. WG3 will include breeders, geneticists, ecologists, silviculturists, forest managers and policy makers and it will focus on Task 3 (deliverable D9);
- WG4: Coordination and organization of all networking, databases management, training and communication activities: conferences, workshops, training schools, web toolbox, open access databases, reports, publications, STSMs. WG4 will provide the integrative approach of the Action and will be focused on Task 4 (deliverable D10).

E. ORGANISATION

E.1 Coordination and organisation

The management and the organization of the Action include the Management Committee (MC) and four Working Groups (WGs), responsible for the four tasks and transverse networking activities. The MC (one representative per participating country) will identify its rules during the kick-off meeting according to the COST regulations. Each National Representative of the MC will indicate the expert to be nominated within
each WP.

The basic research necessary for the achievement of the four tasks will be financed by participating countries.

COST budget will support networking and coordination actions for implementing the Action.

The Management Committee will be responsible for the coordination of national research in implementation of the Action, with the support of WG4 for all networking activities (conferences, workshops, training schools, web toolbox, open access databases, reports, publications, STSMs). The MC will identify and discuss the topics of the training schools, workshop and conferences during the meetings and an “ad hoc” Scientific Management Team (SMT) will be nominated for each event. The SMT has the responsibility for the organization of the events by designing the program, identify speakers and procedures to select the students.

The management and the organization of the Action include the Management Committee (MC) and four Working Groups (WGs), responsible for the four tasks and transverse networking activities. The MC (one representative per participating country) will identify its rules during the kick-off meeting according to the COST regulations. Each National Representative of the MC will indicate the expert to be nominated within each WP.

The basic research necessary for the achievement of the four tasks will be financed by participating countries.

COST budget will support networking and coordination actions for implementing the Action.

The Management Committee will be responsible for the coordination of national research in implementation of the Action, with the support of WG4 for all networking activities (conferences, workshops, training schools, web toolbox, open access databases, reports, publications, STSMs). The MC will identify and discuss the topics of the training schools, workshop and conferences during the meetings and an “ad hoc” Scientific Management Team (SMT) will be nominated for each event. The SMT has the responsibility for the organization of the events by designing the program, identify speakers and procedures to select the students.

Milestones

- M1. Kick-off meeting and establishment of the Management Committee (including the nomination of Chair, vice Chair) and Working Groups (nomination of WP leaders) (by the end of month 3).
- M2. Selection of relevant species and MaP populations for methodological aspects of Task 3 (by the end of month 3).
- M3. Web-site operational (by the end of month 6).
- M4. Climate, soil and topographic information for the distribution area of the selected species and MaP populations (by the end of month 12).
- M5. Organization of the first training school on the impact of global change on FGR and, particularly, on
MaP FGR (by the end of month 18). Additional training schools will be organized according to the needs identified by COST Action participants.

- M6. Database of FGR established or updated (depending on species) for the selected species and MaP populations (by the end of month 24)
- M7. Genetic diversity and adaptive variability data for the selected species and MaP populations (by the end of month 24).
- M8. Overlaid maps of species range, current climate change scenarios and genetic diversity parameters (by the end of month 36).
- M9. Production of guidelines on MaP FGR sustainable use and conservation (by the end of month 40).
- M10. Joint workshop with scientists, stakeholders and policy makers for discussion and approval of recommendations and guidelines on MaP FGR sustainable use and conservation (by the end of month 44).
- M11. Final conference (by the end of month 48)

E.2 Working Groups

During the kick-off meeting, the four Working Groups will be established and their composition identified; a chair and vice-chair will be chosen by the Management Committee based on their expertise.

The Management Committee will rely on Working Groups to implement the Action. Each Working Group will be focused on one or more tasks or a transverse activity and will propose a detailed work plan. The chair of each group will be invited to participate in the Management Committee for a better follow up of tasks.

The COST Action will be organized in order that the four working groups will coordinate in an integrated way for developing tasks. Task 1 and Task 2 will be developed to supply basic data, maps and scenarios concerning climate and species by WG1 and WG2. WG3 will process the information collected and produced in the framework of Task 2 and Task 3, in order to develop common criteria, principles and guidelines. WG4 will represent the connection between Management Committee and the other Working Groups and it will take care of Task 4 for training, dissemination and all networking activities.

Working Groups will interact to develop the following tasks and training activities:

Task 1 – Scientific and technical information on ecological conditions including climate change impacts on MaP populations at southern limits of the species.

- Available resources (maps and databases) on climate, soil and topography and climate projections will be used to highlight the current and future situation of ecological conditions in the distribution area of selected species and MaP populations. The consortium will include specialists in bio-climate, soil science, plant ecology and GIS-experts.
- At least two workshops will be organized for specific planning and standardization of information and
methods at the beginning of the project and at the end of the second year before the start of Task 3.

• At least eight short-term scientific missions will be planned during the first two years

Task 2 - Genetic information including adaptive traits of MaP populations at southern limits of the species.

• To get information on the variability of adaptive traits, the most relevant trial networks will be chosen for a limited set of species. Existing data from genetic trials will be revisited for some common adaptive traits like survival, phenology, growth rhythm, reproduction. A list of genetic parameters will be decided.
• To get information on genetic diversity through genetic markers, literature and existing databases will be surveyed and the most appropriate measures will be selected (richness, structure).
• Experts in quantitative and molecular genetics and in GIS will contribute to this Task. At least two workshops will be organized for specific planning and standardization of information and methods at the beginning of the project and at the end of the second year before the start of Task 3.
• At least eight short-term scientific missions will be planned during the first two years.

Task 3 - Analysis and synthesis of available ecological and genetic information and knowledge gaps highlighted in Task 1 and Task 2 and recommendations for forest managers and for policy makers.

• Data analysis and GIS techniques will be used to produce summary maps on major threats and challenges for MaP FGR in a changing environment. It will help to highlight gaps in the scientific knowledge. It will be the basis for recommendations which could make sense in a context of climate change (assisted migration, delineation of regions of provenances, seed transfer recommendations, seed collection methods, etc).
• Recommendations will be prepared including all types of expertise available among the scientific community but also stakeholders and policy makers. To be more efficient, the proposed guidelines should be discussed and validated during a workshop. A training session will be organized to disseminate and promote implementation of guidelines including genetic diversity for sustainable management of forests.
• At least four workshops in the last two years will be planned for experts from Tasks 1 and 2 for a synthesis of ecological and genetic information and consolidation of results.
• At least ten short-term scientific missions will be planned.
• The Action will benefit from the EUFGIS/EUFORGEN platform supplied by Bioversity International, concerning databases of GCU (Genetic Conservation Units) of FGR in situ conservation and range of species. It also benefits from EU-FORADAPT, TREEBREDEX - EU Infrastructure “Virtual Forest Tree Breeding Laboratory” and TREES4FUTURE platforms for recording the ex situ conservation and international and national trials established in Europe.
• Other EU projects as EVOLTREE (EVOLution of TREES) as drivers of terrestrial biodiversity, NOVELTREE (Novel tree breeding strategies), LINKTREE (Linking genetic variability with ecological responses to environmental changes) where forest trees are intended as model systems, will support the
Action thanks to the skills and knowledge of partners.

Task 4. Coordination and organization of all networking, databases management, training and communication activities: web-site, organization of conferences, training schools, short term scientific missions.

- At least one training school per year will be organized on topic to be identified during the COST Action meetings.
- At least one meeting of the Management Committee per year will be organized.
- Workshops will be organized based on needs identified by WGs.
- All relevant information produced by the COST Action Working Groups will be published on the web site.
- One annual report will be produced by the Management Committee with the support of the 4 Working Groups.
- At least one publication per year will be submitted by COST Action participants to international scientific journals.

E.3 Liaison and interaction with other research programmes

- Scientists involved in the preparation of this proposal are already participating to some other European Union-funded projects dealing with similar topics (EVOLTREE, TREEBREEDEX, NOVELTREE, LINKTREE, AGORA, EUFGIS, TREES4FUTURE, FORGER, ERA-net/FORESTERRA) and networks (FAO - *Silva Mediterranea*, Bioversity International/EUFORGEN, IUFRO 2.02.13 and 2.04.01, EFIMED). This will ensure a better integration of activities and prevention of redundancies.
- The Action will use skills, data and tools generated by the above-mentioned projects and networks when relevant.
- International bodies (CIHEAM, FAO, EFIMED, Bioversity International, IUFRO) will help in training, networking and interfacing with policy makers.
- The web-site of the Action will have links with the different web sites of projects, networks and bodies referred above.
- The databases will be integrated with existing platforms (EVOLTREE, EUFGIS, TREEBREEDEX etc.) for harmonizing metadata and ensuring long term and public access.
- Joint conferences/workshops will be organized when appropriate.

E.4 Gender balance and involvement of early-stage researchers

This COST Action will respect an appropriate gender balance in all its activities and the Management Committee will place this as a standard item on all its MC agendas. The Action will also be committed to considerably involve early-stage researchers. This item will also be placed as a standard item on all MC
agendas.

This COST Action will respect an appropriate gender balance in all its activities and the Management Committee will place this as a standard item on all its agendas. The Action will also be committed to involve early-stage researchers. This item will also be placed as a standard item on all agendas.

At the moment of the presentation of this proposal about 19/79 participants (nearly 23%) women were recorded among potential participants from COST Countries, Non-COST Countries and International Bodies.

In general Country coordinators and experts belong to the Scientists and Senior Scientists groups, given the skill requested for developing the network. Training young researchers and forest managers for improving a common mentality, common approaches and to transfer knowledge and skills among countries but also among generations is a clear objective of the network.

F. TIMETABLE

The project is intended to last for 48 months.

Tasks 1 and 2 will start together at the beginning of the project and will last for 24 months. Based on results provided by Tasks 1 and 2, Task 3 will start and last for 30 months.

The beginning of Task 3 may overlap Tasks 1 and 2 according to progress in these tasks. The Task 4 will start at the beginning for all duration of the Action.

<table>
<thead>
<tr>
<th></th>
<th>year1</th>
<th></th>
<th>year2</th>
<th></th>
<th>year3</th>
<th></th>
<th>year4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Networking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task1</td>
<td>M2</td>
<td></td>
<td>M5</td>
<td>M6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task2</td>
<td></td>
<td></td>
<td>M4</td>
<td>M7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Open Call Full Proposal oc-2011-2-10938
m = plenary annual meeting

Mi refers to milestones (above)

TS = Training School

G. ECONOMIC DIMENSION

The following 19 COST countries have actively participated in the preparation of the Action or otherwise indicated their interest: Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Finland, France, Germany, Greece, Hungary, Israel, Italy, Netherlands, Norway, Portugal, Romania, Slovakia, Spain, Turkey, United Kingdom. On the basis of national estimates, the economic dimension of the activities to be carried out under the Action has been estimated at 100 Million € for the total duration of the Action. This estimate is valid under the assumption that all the countries mentioned above but no other countries will participate in the Action. Any departure from this will change the total cost accordingly.

- The following 19 COST countries have actively participated in the preparation of the Action or otherwise indicated their interest: Austria, Bosnia and Herzegovina, Bulgaria, Germany, Spain, Finland, France, Greece, Hungary, Israel, Italy, Norway, Poland, Portugal, Romania, Slovak Republic, Turkey, UK. On the basis of national estimates, the economic dimension of the activities to be carried out under the Action has been estimated at 100 Million € for the total duration of the Action. This estimate is valid under the assumption that all the countries mentioned above but no other countries will participate in the Action. Any departure from this will change the total cost accordingly.
- Additional expenses, such as equipment, instruments and/or infrastructure, were included in the total amount (76 Millions € manpower COST Countries + 32 Millions of additional expenses Non-COST Countries and International Bodies + 2.0 Millions for equipments, instruments and/or infrastructures, consumables, secretary etc.). Algeria, Lebanon, Morocco, Syria and Tunisia, as Non-COST countries, are interested in participation to this COST Action.
- FAO, IUFRO, EFIMED and Bioversity International/EUFORGEN, as International Bodies are interested in participation to this COST Action.
- Training School will be organized, once per year, for a total of about 40 students intended as young researchers/research officers/managers onto topics to be considered according to needs.

H. DISSEMINATION PLAN
H.1 Who?

The Action will spread knowledge and excellence in its domain at all levels in the European Union, from the scientists through the stakeholders to the citizen. The Action recognizes the need to take a proactive role in ensuring the adoption and adaptation of project outputs into practical recommendations for improved conservation and sustainable use of MaP FGR. The Action will increase the awareness of managers and policy makers to novel and improved techniques and disseminate the results to the full range of user-groups and target audiences: scientists, forest breeders, forest owners, forest managers, European forest-based sector, policy makers and end users.

**Scientists:** papers, workshops and conferences, proceedings, training schools, atlas of southern Europe maps of environmental impacts on MaP FGR, databases, access to inter-and intra-net pages of the web-site.

**Policy makers:** one workshop, final conference, recommendations and guidelines on ways to manage, monitor and regulate MaP FGR conservation and use, atlas of southern Europe maps of environmental impacts on MaP FGR, free access to the internet pages of the web-site.

**Forest Managers:** recommendations and guidelines on ways to manage, monitor and regulate MaP FGR conservation and use, atlas of southern Europe of environmental impacts on MaP FGR, free access to the internet pages of the web-site, final conference.

**Conservationists:** recommendations and guidelines on ways to manage, monitor and regulate MaP FGR conservation and use, atlas of southern Europe of environmental impacts on MaP FGR, free access to the internet pages of the web-site, final conference.

**Forest owners:** recommendations and guidelines on ways to manage, monitor and regulate MaP FGR conservation and use, free access to the internet pages of the web-site, final conference.

**Public:** non-technical publications (press-release and any other forms of media), access to the internet pages of the web-site.

H.2 What?

**Scientific:** papers, workshops and conferences, proceedings, training schools, atlas of southern Europe maps of environmental impacts on MaP FGR, databases, access to inter-and intra-net pages of the web-site.

**Policy:** one workshop, final conference, recommendations and guidelines on ways to manage, monitor and regulate MaP FGR conservation and use, atlas of southern Europe maps of environmental impacts on MaP FGR, free access to the internet pages of the web-site.
**Conservation**: recommendations and guidelines on ways to manage, monitor and regulate MaP FGR conservation and use, atlas of southern Europe maps of environmental impacts on MaP FGR, free access to the internet pages of the web-site, final conference.

**Management**: recommendations and guidelines on ways to manage, monitor and regulate MaP FGR conservation and use, atlas of southern Europe maps of environmental impacts on MaP FGR, free access to the internet pages of the web-site, final conference.

**Private forestry**: recommendations and guidelines on ways to manage, monitor and regulate MaP FGR conservation and use, free access to the internet pages of the web-site, final conference.

**Public awareness**: non-technical publications (press-release and any other forms of media), access to the internet pages of the web-site. In addition according to COST rules, a progress report will be produced each year by the end of the year as well as a final report at the end of the Action.

**H.3 How?**

Each scientific Working Group will be responsible for the dissemination of results produced with the help of WG4.

Workshops, conferences, training schools will be advertised through the web-site and TREEBREEDEX, EUFORGEN, *Silva Mediterranea*, TREE4FUTURE, etc. mailing lists provided by partners.

Materials and/or minutes for Workshops, conferences and training schools will be made available through the web-site. The dissemination plan of the Action will be revised every year by the Management Committee.
Part II - Additional Information (This part will not be element of the MoU)

Part II-A . LIST OF EXPERTS

Total number of participants 80
Gender balance: female 19 of 80 (23.75%)

<table>
<thead>
<tr>
<th>COST Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AT - Austria</strong></td>
</tr>
<tr>
<td>Dr Berthold HEINZE</td>
</tr>
<tr>
<td>Research Centre for Forests, Natural Hazards and Landscape</td>
</tr>
<tr>
<td>Unit of Genome research</td>
</tr>
<tr>
<td>[WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Geneticist, population genetics, breeding, FGR management</td>
</tr>
</tbody>
</table>

| **BA - Bosnia and Herzegovina**  |
| Prof. Dalibor BALLIAN |
| University of Sarajevo |
| Faculty of Forestry |
| [Potential MC Member] [WG Member] |
| Expertise: FPS - Genetics, ecology, silviculture |
| Prof. Cemal VISNJIC |
| University of Sarajevo |
| Faculty of forestry |
| [WG Member] |
| Expertise: FPS - Silviculture, aorestation, climate change, adaptation |
| Prof. Faruk BOGUNIC |
| University of Sarajevo |
| Forestry Faculty |
| [WG Member] |
| Expertise: FPS - molecular cytogenetics, population genetics, morphometrics |

| **BE - Belgium**  |
| Dr Bart DE CUYPER |
| INBO |
| [WG Member] |
| Expertise: FPS - Breeding |

| **BG - Bulgaria**  |
| Dr Peter ZHELEV |
| University of Forestry |
| [Potential MC Member] [WG Member] |
| Expertise: FPS - Genetics, forestry |
**DE - Germany**

Dr Georg VON WUEHLISCH  
Federal Research Institute for Rural Areas, Forestry, and Fisheries  
Institute for Forest Genetics  
[Potential MC Member] [WG Member]  
Expertise: FPS - Silviculture, genetics, adaptation, climate change

| Dr Annette MENZEL |  
| Technical University Munich |  
| [WG Member] |  
| Expertise: FPS - Ecoclimatology, adaptation, climate change |

Prof. Nicole ESTRELLA  
Technical University Munich  
[WG Member]  
Expertise: FPS - Ecoclimatology, adaptation, climate change

**EL - Greece**

Prof. Evi ALIZOTI  
Aristotle University of Thessaloniki  
School of Forestry and Natural Environment, Laboratory of Forest Genetics and Tree Improvement  
[WG Member]  
Expertise: FPS - Genetics, breeding, management

| Prof. Ioannis GITAS |  
| Aristotle University of Thessaloniki, Faculty of Forestry and Natural Environment |  
| [WG Member] |  
| Expertise: FPS - Forest change mapping, genetic resources management, genetic resources management |

| Prof. Aristotelis PAPAGEORGIOU |  
| Democritus University Thrace |  
| School of Forestry and Management of Environment and Natural Resources |  
| [WG Member] |

**ES - Spain**

Dr Edoardo NOTIVOL  
CITA  
Forest Resources Unit  
[WG Member]  
Expertise: FPS - Genetics, Biostatistics

| Dr Maria MAYOL |  
| CREAf |  
| [WG Member] |  
| Expertise: FPS - Forest ecology, forest genetics |

| Prof. Miquel RIBA |  
| CREAf |  
| [WG Member] |  
| Expertise: FPS - Forest ecology, forest genetics |

| Dr Ricardo ALIA |  
| INIA |  
| [Potential MC Member] [WG Member] |  
| Expertise: FPS - Forest genetics, conservation genetics, geographical variation, Mediterranean conifers, Forest reproductive material |

Dr José CLIMENT  
INIA  
[WG Member]
| Expertise: FPS - Breeding, adaptation, phenotypic plasticity, management | Dr Jose M. GARCIA-DEL-BARRIO  
INIA  
[WG Member]  
Expertise: FPS - Climate change, management |
|---|---|
| Dr Santiago C. GONZALEZ-MARTINEZ  
INIA  
[WG Member]  
Expertise: FPS - Genetics | Dr Myriam HEUERTZ  
INIA  
[Proposal Participant] [WG Member]  
Expertise: FPS - Population genetics, conservation genetics |

## FI - Finland

| Dr Katri KARKKAINEN  
Finnish Forest Research Institute Metla  
[WG Member]  
Expertise: FPS - population genetics, adaptive traits, tree breeding, molecular markers | Dr Matti ROUSI  
Finnish Forest Research Institute Metla  
[Potential MC Member] [WG Member]  
Expertise: FPS - biotic and abiotic resistance, resistance breeding, herbivory, genetic adaptability |
|---|---|
| Dr Mari RUSANEN  
Finnish Forest Research Institute Metla  
[Potential MC Member] [WG Member]  
Expertise: FPS - genetic conservation, small populations, genetic resources | |

## FR - France

| Dr Bruno FADY  
INRA URFM / FR ECCOREV  
[Proposal Participant] [Potential MC Member] [WG Member]  
Expertise: FPS - genetics, ecology | Dr Christian PICHOT  
INRA URFM / FR ECCOREV  
-  
[WG Member]  
Expertise: FPS - genetics, databases |
|---|---|
| Dr Francois LEFEVRE  
INRA URFM / FR ECCOREV  
-  
[Proposal Participant] [WG Member]  
Expertise: FPS - genetics, breeding, adaptation | Dr Luc Emile PAQUES  
INRA-Unité AGPF  
[Potential MC Member] [WG Member]  
Expertise: FPS - Treebreedex coordination, Forest Trees4Future coordinator, tree breeding, genetics, ecology, networking |

## HU - Hungary

| Prof. Csaba MáTYáS  
University of West Hungary, Faculty of Forestry Institute of Environmental and Earth Sciences, NEESPI Focus Research Center for Nonboreal Eastern Europe  
[Potential MC Member] [WG Member]  
Expertise: FPS - population genetics, genetic adaptation processes in forest trees, gene conservation | |

---

Open Call Full Proposal oc-2011-2-10938  
Page 27/44
<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
<th>Institution</th>
<th>Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL - Israel</td>
<td>Dr Leonid KOROL</td>
<td>Institute of Plant Sciences, ARO</td>
<td>Expertise: FPS - forest genetics, genetic diversity, introgressive hybridization, gene flow</td>
</tr>
<tr>
<td>IT - Italy</td>
<td>Dr Fine PINCHAS</td>
<td>Institute of Soil Water &amp; Environmental Science, ARO</td>
<td>Expertise: FA - soil formation, fertility, plant ecology</td>
</tr>
<tr>
<td>IT - Italy</td>
<td>Dr Federico SEBASTIANI</td>
<td>CNR- IGV, Consiglio Nazionale delle Ricerche - Istituto di Genetica Vegetale</td>
<td>Expertise: FPS - population genetics</td>
</tr>
<tr>
<td>IT - Italy</td>
<td>Dr Giovanni Giuseppe VENDRAMIN</td>
<td>CNR- IGV, Consiglio Nazionale delle Ricerche - Istituto di Genetica Vegetale</td>
<td>Expertise: FPS - &quot;Population, genetics&quot;; &quot;conservation, genetics&quot;</td>
</tr>
<tr>
<td>IT - Italy</td>
<td>Dr Cristina VETTORI</td>
<td>CNR- IGV, Consiglio Nazionale delle Ricerche - Istituto di Genetica Vegetale</td>
<td>Expertise: FPS - population genetics</td>
</tr>
<tr>
<td>IT - Italy</td>
<td>Dr Francesca BAGNOLI</td>
<td>CNR- IGV, Consiglio Nazionale delle Ricerche - Istituto di Protezione Piante</td>
<td>Expertise: FPS - Conservation genetics</td>
</tr>
<tr>
<td>IT - Italy</td>
<td>Dr Silvia FINESCHI</td>
<td>CNR- IGV, Consiglio Nazionale delle Ricerche - Istituto di Protezione Piante</td>
<td>Expertise: FPS - Population genetics</td>
</tr>
<tr>
<td>IT - Italy</td>
<td>Dr Paolo CANTIANI</td>
<td>CRA SEL, Consiglio per la Ricerca e Sperimentazione in Agricoltura - Centro di Ricerca per la Selvicoltura</td>
<td>Expertise: FPS - Management, silviculture</td>
</tr>
<tr>
<td>IT - Italy</td>
<td>Dr Luigi PERINI</td>
<td>CRA, URCM - Consiglio per la Ricerca e la sperimentazione in Agricoltura, Unità di Ricerca per la Climatologia e la Meteorologia applicate all'Agricoltura</td>
<td>Expertise: FA - Agroclimatology, adaptation, climate change</td>
</tr>
<tr>
<td>IT - Italy</td>
<td>Prof. Carlo URBINATI</td>
<td>Università Politecnica delle Marche</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr Ugo CHIAVETTA</td>
<td>CRA SEL, Consiglio per la Ricerca e Sperimentazione in Agricoltura - Centro di Ricerca per la Selvicoltura</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr Anna DE ROGATIS</td>
<td>CRA SEL, Consiglio per la Ricerca e Sperimentazione in Agricoltura - Centro di Ricerca per la Selvicoltura</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prof. Piero BELLETTI</td>
<td>Università di Torino</td>
<td></td>
</tr>
</tbody>
</table>

Open Call Full Proposal oc-2011-2-10938
### NL - Netherlands

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Joukje BUITEVELD</td>
<td>STICHTING DIENST LANDBOUWKUNDING ONDERZOEK, Alterra</td>
<td>Expertise: FPS - Population genetics, conservation genetics</td>
</tr>
<tr>
<td>Dr Koen KRAMER</td>
<td>STICHTING DIENST LANDBOUWKUNDING ONDERZOEK, Alterra</td>
<td>Expertise: FPS - Modelling, ecology</td>
</tr>
</tbody>
</table>

### NO - Norway

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Tor MYKING</td>
<td>Norwegian Forest and Landscape Institute and NordGen</td>
<td>Expertise: FPS - Population genetics, adaptation of climatic conditions, plant physiology, conservation of genetic resources</td>
</tr>
<tr>
<td>Dr Tore SKRøPPA</td>
<td>Norwegian Forest and Landscape Institute and NordGen</td>
<td>Expertise: FPS - Quantitative genetics, forest tree breeding, climatic adaptation, conservation of genetic resources, statistic</td>
</tr>
<tr>
<td>Dr Jørn Henrik SøNSTEBø</td>
<td>Norwegian Forest and Landscape Institute and NordGen</td>
<td>Expertise: FPS - Quantitative genetics, forest tree breeding, data bases, computer networks</td>
</tr>
</tbody>
</table>

### PT - Portugal

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Carolina VARELA</td>
<td>Instituto Nacional de Recursos Biológicos, I.P./I.N.I.A</td>
<td>Expertise: FPS -</td>
</tr>
</tbody>
</table>

### RO - Romania

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Gheorghe PARNUTA</td>
<td>FOREST RESEARCH AND MANAGEMENT PLANNING INSTITUTE ICAS</td>
<td>Expertise: FPS - Forest genetic resources, Forest reproductive materials, Genetic variation, Silviculture</td>
</tr>
<tr>
<td>Dr Flaviu POPESCU</td>
<td>FOREST RESEARCH AND MANAGEMENT PLANNING INSTITUTE ICAS</td>
<td>Expertise: FPS - Molecular markers, Genetic variation, Breeder, Quantitative genetics</td>
</tr>
<tr>
<td>Mr Marin TUDOROIU</td>
<td>FOREST RESEARCH AND MANAGEMENT PLANNING INSTITUTE ICAS</td>
<td>Expertise: FPS -</td>
</tr>
<tr>
<td>Country</td>
<td>Name</td>
<td>Institution</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SK</td>
<td>Dr Roman LONGAUER</td>
<td>National Forest Centre, Forest Research Institute</td>
</tr>
<tr>
<td>TR</td>
<td>Dr Murat ALAN</td>
<td>Forest Tree Seeds and Tree Breeding Research Directorate</td>
</tr>
<tr>
<td></td>
<td>Dr Gaye Eren KANDEMIIR</td>
<td>Forest Tree Seeds and Tree Breeding Research Directorate</td>
</tr>
<tr>
<td>UK</td>
<td>Dr Stephen CAVERS</td>
<td>Centre for Ecology and Hydrology, CHE Edinburgh</td>
</tr>
<tr>
<td></td>
<td>Dr Witold WACHOWIAK</td>
<td>Centre for Ecology and Hydrology, CHE Edinburgh</td>
</tr>
</tbody>
</table>

**Prof. Lucian DINCĂ**
Universitatea Transilvania din Brasov
Facultatea de Silvicultura si Exploatari Forestiere
[WG Member]
Expertise: FPS - Pedology, Silviculture, Climatic Pedology, Silviculture, Climatic scenarios and models, Forest ecosystem, Forest decline maps

**Dr Maria TEODOSIU**
FOREST RESEARCH AND MANAGEMENT PLANNING INSTITUTE ICAS
GENETICS AND TREE BREEDING DEPARTMENT
[WG Member]
Expertise: FPS - Molecular markers, Genetic variation, Breeder, Quantitative genetics
## Non-COST Participants

### DZ - Algeria

<table>
<thead>
<tr>
<th>Dr Mohamed BOUYAICHE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unité de recherche à l'Institut National de Recherche Forestière (INRF)</td>
</tr>
<tr>
<td>[Potential MC Member] [WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Silviculture, desertification, Breeding, genetics</td>
</tr>
</tbody>
</table>

### LB - Lebanon

<table>
<thead>
<tr>
<th>Dr Magda BOU DAGHER KHARRAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Science Saint Joseph University</td>
</tr>
<tr>
<td>[Potential MC Member] [WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Physiology, bioclimatology, sap flow, forestry, climate change</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dr Bouchra DOUAIHY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Science Saint Joseph University</td>
</tr>
<tr>
<td>[WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Climate, ecology</td>
</tr>
</tbody>
</table>

### MA - Morocco

<table>
<thead>
<tr>
<th>Dr Abderrahman AAFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRF / HCEFLCD</td>
</tr>
<tr>
<td>[WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Forestry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dr Mohamed GHANMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRF / HCEFLCD</td>
</tr>
<tr>
<td>[WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Genetics, conservation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dr Hassan SBAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRF / HCEFLCD</td>
</tr>
<tr>
<td>[Proposal Participant] [WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Forest genetics, breeding, conservation</td>
</tr>
</tbody>
</table>

### SY - Syrian Arab Republic

<table>
<thead>
<tr>
<th>Dr Hafez MAHFOUD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agronomy Faculty Tichreen University</td>
</tr>
<tr>
<td>Ecology and forestry department</td>
</tr>
<tr>
<td>[WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Ecology, forestry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dr Ilene MAHFOUD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agronomy Faculty Tichreen University</td>
</tr>
<tr>
<td>Ecology and forestry department</td>
</tr>
<tr>
<td>[Potential MC Member] [WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Ecology, Forest genetic Resources conservation, Forestry, Breeding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dr Zuheir SHATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agronomy Faculty Tichreen University</td>
</tr>
<tr>
<td>Ecology and forestry department</td>
</tr>
<tr>
<td>[WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Ecology, forestry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dr Ali WAHEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agronomy Faculty Tichreen University</td>
</tr>
<tr>
<td>Ecology and forestry department</td>
</tr>
<tr>
<td>[WG Member]</td>
</tr>
<tr>
<td>Expertise: FPS - Ecology, forestry</td>
</tr>
</tbody>
</table>

### TN - Tunisia

<table>
<thead>
<tr>
<th>Dr Abdelhamid KHALDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>INRGREF</td>
</tr>
<tr>
<td>[Potential MC Member] [WG Member]</td>
</tr>
<tr>
<td>Dr Mohamed Larbi KHOUJA</td>
</tr>
<tr>
<td>INRGREF</td>
</tr>
<tr>
<td>[Potential MC Member] [WG Member]</td>
</tr>
<tr>
<td>Dr Zouhaier NASR</td>
</tr>
</tbody>
</table>
PARTICIPATION OF INSTITUTIONS FROM NON-COST COUNTRIES

DESCRIPTION OF MUTUAL BENEFITS OF THE ANTICIPATED PARTICIPATION OF:
Unité de recherche à l'institut National de Recherche Forestiere (INRF) from Algeria

BENEFITS FOR COST AND FOR THE COST ACTION:
Ageria is part of FAO Silva Mediterranea, as part its territory is under hard Mediterranean conditions, Algerian forest genetic resources, more adapted to dry climate, could be of focal interest for more northern countries in the case of the climate belt shift. Marginal populations of forest species as Abies sp. and pines, grow there and their provenances are included in experimental EU trials and databases. Cost Action will benefit from the local experience and of the improved knowledge of climate effects on FGR in extreme conditions. Algeria is one of the most active countries in the framework of relationships with Cost countries, since the long-time collaborations. The presence of in situ origin populations spread around the Mediterranean and of local test belonging to international trials establishment in the past will be an advantage for the goals of the Action.

BENEFITS FOR Unité de recherche à l'Institut National de Recherche Forestière (INRF):

BENEFITS FOR Institut National de Recherche Forestière (INRF): Algeria is part of FAO Silva Mediterranea, but contacts and exchanges of skills and experience with Cost countries are in general low. The Action will be a valid tool and a great opportunity for ideas and skill exchanges and for training researchers and young generation research people and to have valuable indication how to manage their endangered Map FGR.

BRIEF DESCRIPTION OF TARGETED SCIENTIFIC ACTIVITIES, INCLUDING WORKING GROUPS SELECTED FOR COOPERATION:

MaP FGR as Abies sp. and pines, grow there and their provenances are included in experimental EU trials and databases. WG 1, 2 and 3 will be involved in activities concerning those really endangered populations as well as Cedrus atlantica.

The Action will give the opportunity for starting strategies for preserving in situ FGR or for transferring and saving endangered populations in other suitable sites.

- Integrate the present climate situation in the Map FGR maps;
- Infer future scenarios related to the climate change and of its possible effects on local forest species
- Train researchers on the problem and integrate them in the Euro-Mediterranean context.
- WGs selected for cooperation are the same to be established for this Cost Action, in the context of a wide integration view as usual among research people.
DESCRIPTION OF MUTUAL BENEFITS OF THE ANTICIPATED PARTICIPATION OF:
Faculty of Science Saint Joseph University from Lebanon

BENEFITS FOR COST AND FOR THE COST ACTION:

Lebanon forest genetic resources, Cedrus and Pines, more adapted to dry climate, could be of focal interest
for more northern countries in the case of the climate belt shift. Cost Action will benefit of the local
experience and of the improved knowledge of climate effects on FGR in extreme conditions. Algeria is one of
the most active countries in the framework of relationships with Cost countries, since the long time
collaborations. The presence of in situ origin populations of materials spread around the Mediterranean
the framework of international trials establishment in the past will be an advantage for the goals of the Action.

BENEFITS FOR Faculty of Science Saint Joseph University:

Lebanon is part of FAO Silva Mediterranea WG 4 "Forets genetice Resources" and is really interested in
interacting in the framework of networking activities for establishing actions and strategies on FGR, but
contacts and exchanges of skills and experience with Cost Countries are in general low. The Action will be a
valid tool and a great opportunity for ideas and skill exchanges and for training researchers and young
generation research people.

BRIEF DESCRIPTION OF TARGETED SCIENTIFIC ACTIVITIES, INCLUDING WORKING GROUPS
SELECTED FOR COOPERATION:

The Action will give the opportunity for establishing strategies for preserving in situ FGR or for transferring
and saving endangered populations (Cedrus) in other suitable sites.

• Integrate the present climate situation in the MaP FRG maps;
• infer future scenarios related to the climate change and of its possible effects on local forest species
• train researchers on the problem and integrate them in the Euro-Mediterranean context.
• Wgs selected for cooperation are the same to be established for this Cost Action, in the context of a wide
integration view as usual among research people.

DESCRIPTION OF MUTUAL BENEFITS OF THE ANTICIPATED PARTICIPATION OF:
CRF / HCEFLCD from Morocco
BENEFITS FOR COST AND FOR THE COST ACTION:

Morocco is part of FAO Silva Mediterranea, as part its territory is under Mediterranean conditions, Moroccan forest genetic resources, more adapted to dry climate, could by of focal interest for more northern countries in the case of the climate belt shift. Cost Action will benefit of the local experience and of the improved knowledge of climate effects on MaP FGR in extreme conditions. Morocco is one of the most active countries in the framework of relationships with Cost countries. since the long time collaborations. The presence of local test belonging to international trials establishment in the past will be an advantage for the goals of the Action.

BENEFITS FOR CRF / HCEFLCD:

Morocco is part of FAO Silva Mediterranea and IUFRO WP 2.02013, but contacts and exchanges of skills and experience are in general low with non-Silva-mediterranea Countries. The Action will be a valid tool and a great opportunity for ideas and skill exchanges and for training researchers and young generation research people.

BRIEF DESCRIPTION OF TARGETED SCIENTIFIC ACTIVITIES, INCLUDING WORKING GROUPS SELECTED FOR COOPERATION:

The Action will give the opportunity for starting strategies for preserving in situ FGR or for transferring and saving endangered populations in other suitable sites.

• Integrate the present climate situation in the pan-Mediterranean Map;

• infer future scenarios related to the climate change and of its possible effects on local forest species

• train researchers on the problem and integrate them in the Euro-Mediterranean context.

• Wgs selected for cooperation are the same to be established for this Cost Action, in the context of a wide integration view as usual among research people.

DESCRIPTION OF MUTUAL BENEFITS OF THE ANTICIPATED PARTICIPATION OF:
Agronomy Faculty Tichreen University from Syrian Arab Republic

BENEFITS FOR COST AND FOR THE COST ACTION:
Syrian Arab Republic [SY] is part of FAO Silva Mediterranea, as part its territory is under Mediterranean conditions, Syrian MaP FGR, more adapted to dry climate, could by of focal interest for more northern countries in the case of the climate belt shift. Cost Action will benefit of the local experience and of the improved knowledge of climate effects on FGR in extreme conditions.

**BENEFITS FOR Agronomy Faculty Tichreen University:**

Syrian Arab Republic [SY] is part of FAO Silva Mediterranea, but contacts and exchanges of skills and experience are in general low. The Action will be a valid tool and a great opportunity for ideas and skill exchanges and for training researchers and young generation research people.

**BRIEF DESCRIPTION OF TARGETED SCIENTIFIC ACTIVITIES, INCLUDING WORKING GROUPS SELECTED FOR COOPERATION:**

The Action will give the opportunity for starting strategies for preserving in situ FGR or for transferring and saving endangered populations in other suitable sites.

- Integrate the present climate situation in the MaP FGR maps;
- Infer future scenarios related to the climate change and of its possible effects on local forest species;
- Train researchers on the problem and integrate them in the Euro-Mediterranean context.
- Wgs selected for cooperation are the same to be established for this Cost Action, in the context of a wide integration view as usual among research people.

**DESCRIPTION OF MUTUAL BENEFITS OF THE ANTICIPATED PARTICIPATION OF:**

**INRGREF from Tunisia**

**BENEFITS FOR COST AND FOR THE COST ACTION:**

Tunisia is part of FAO Silva Mediterranea and of IUFRO WP 2.02.13, as part its territory is under Mediterranean conditions, Tunisia forest genetic resources, more adapted to dry climate, could by of focal interest for more northern countries in the case of the climate belt shift. Tunisia is one of the most active countries in the framework of relationships with Cost countries. Since the long time collaborations and the
Cost action will learn a lot from the local experience. The presence of local test belonging to international trials establishment in the past will be an advantage for the goals of the Action. Cost Action will benefit of the local experience and of the improved knowledge of climate effects on FGR in extreme conditions.

BENEFITS FOR INRGREF:

INGREF will improve contacts and exchanges of skills and experience. The Action will be a valid tool and a great opportunity for ideas and skill exchanges and for training researchers and young generation research people.

BRIEF DESCRIPTION OF TARGETED SCIENTIFIC ACTIVITIES, INCLUDING WORKING GROUPS SELECTED FOR COOPERATION:

The Action will give the opportunity for starting strategies for managing in situ MaP FGR or for transferring and saving endangered populations in other suitable sites.

• Integrate the present climate situation in the MaP-FGR map;

• infer future scenarios related to the climate change and of its possible effects on local forest species

• train researchers on the problem and integrate them in the Euro-Mediterranean context.

• Wgs selected for cooperation are the same to be established for this Cost Action, in the context of a wide integration view as usual among research people.

Part II-B. HISTORY OF THE PROPOSAL

This proposal was developed in relation to the recommendations issued after the joint meeting of experts of Fao Silva Mediterranea and IUFRO WP 2.02.13 Workshop held in 2007 in Arezzo (Italy) and after the XX Session of Fao Silva Mediterranea. It was also developed, at the same time, in the framework of activities of groups of researchers working on genetics, conservation and breeding Forest Genetic Resource in view of the effects of the global change. Researchers from different European regions but working together in EU funded programmes as well as in research networks as Euforgen, IUFRO and others, felt it is time to put together and to integrate their different experiences and information by creating a network focused on the main future efforts for foresters: preserving diversity and favourize the adaptative potential of southern marginal populations.
This proposal has been prepared in the following context:

1. Adoption in 2009 of the Work Plan 2009-2012 of the Silva Mediterranea Working Group of Forest Genetic Resources coordinate by the proponent.

2. Organization of a workshop on Mediterranean Forest Genetic Resources and Climate Change in Open Call Full Proposal oc-2010-1-6343 Page 37/42 Chania – Crete – November 24 to 26, 2009 with special recommendations on conservation of Forest Genetic Resources in the context of climate change and decision on the preparation of a COST Action proposal in 2010.

3. Organization of a workshop in Tunis (INRGREF – 10 to 12 march 2010 - Tunisia) to prepare with a collective and participatory approach the COST Action Preliminary Proposal.

As part of activities of the Forest Genetic Resources Working Group of Silva Mediterranea (WG4), CIHEAM, the INRGREF and FAO organized from 10 to 12 March 2010 a regional workshop in Tunis to prepare a project proposal titled “Strengthening conservation and management of forest genetic resources (RGF): a key issue for the adaptation of Mediterranean forests to environmental changes (EUR-MedFGR)”. The Tunis workshop, planned in accordance with the recommendations of the meeting in Chania (Crete - Greece) in November 2009 was held at the “Institut National de la Recherche en Génie Rural, Eaux et Forêts” (INRGREF) of Tunis (Tunisia). Fifteen people attended the event, representing four countries of the Southern Mediterranean (Morocco, Lebanon, Tunisia and Turkey), four European countries (Italy, Spain, France and Portugal) and two regional institutions (CIHEAM and the Secretariat of Silva Mediterranea, FAO). Discussions have been held to permit, first, presenting the priorities of the partners of the future regional project and several working sessions were then used to prepare the proposal pursuant to the tender form of a COST project (instrument for networking research activities of the European Union).

Part II-C. PRELIMINARY WORK PROGRAMME

No needed.

Part II-D. RECENT PUBLICATIONS


America.


of Forest Science 66 (8), Article Number: 800.


Part II-E. FURTHER REMARKS

no needed.